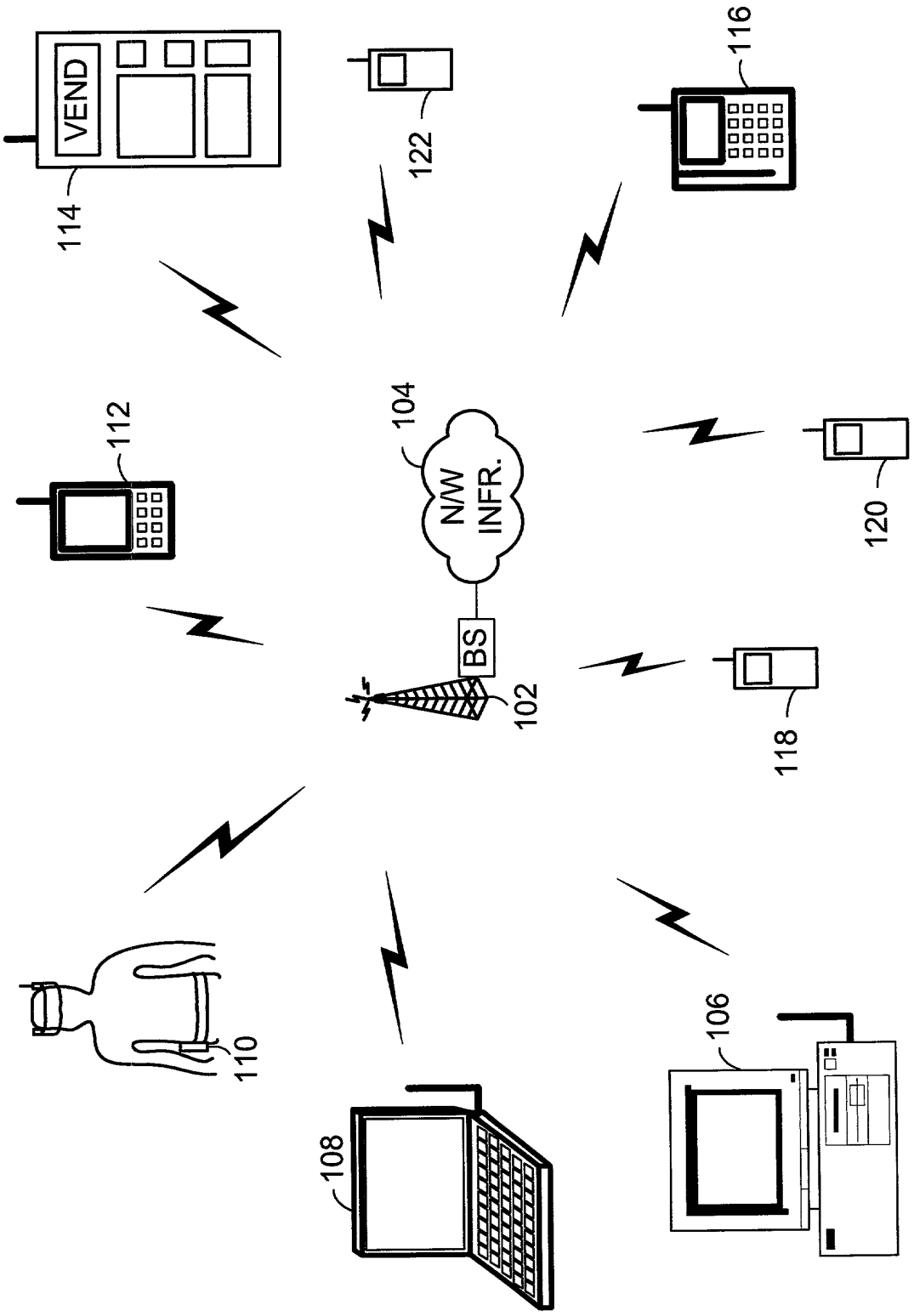

FIG. 1

TOETHO" 2015E360

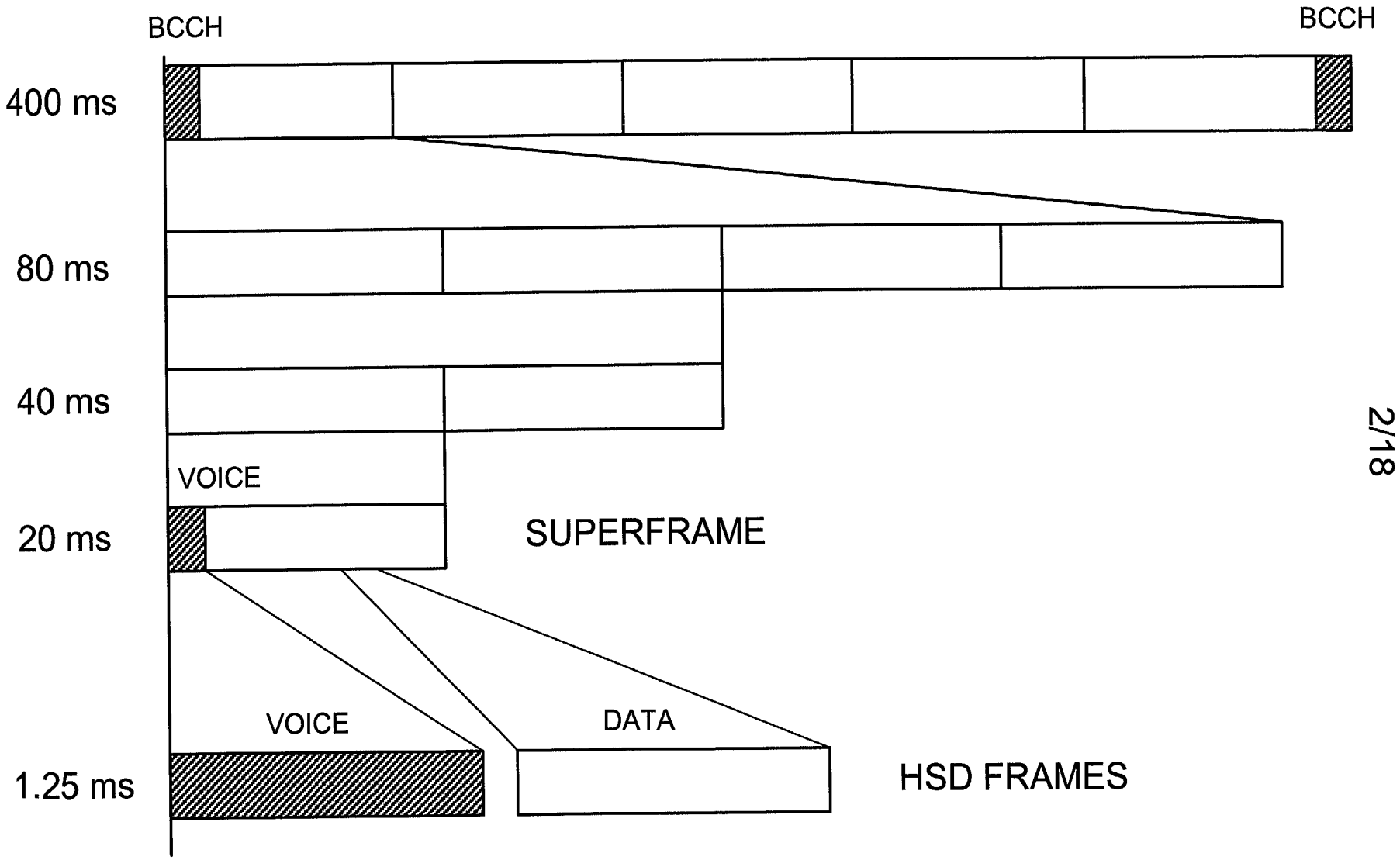

FIG. 2

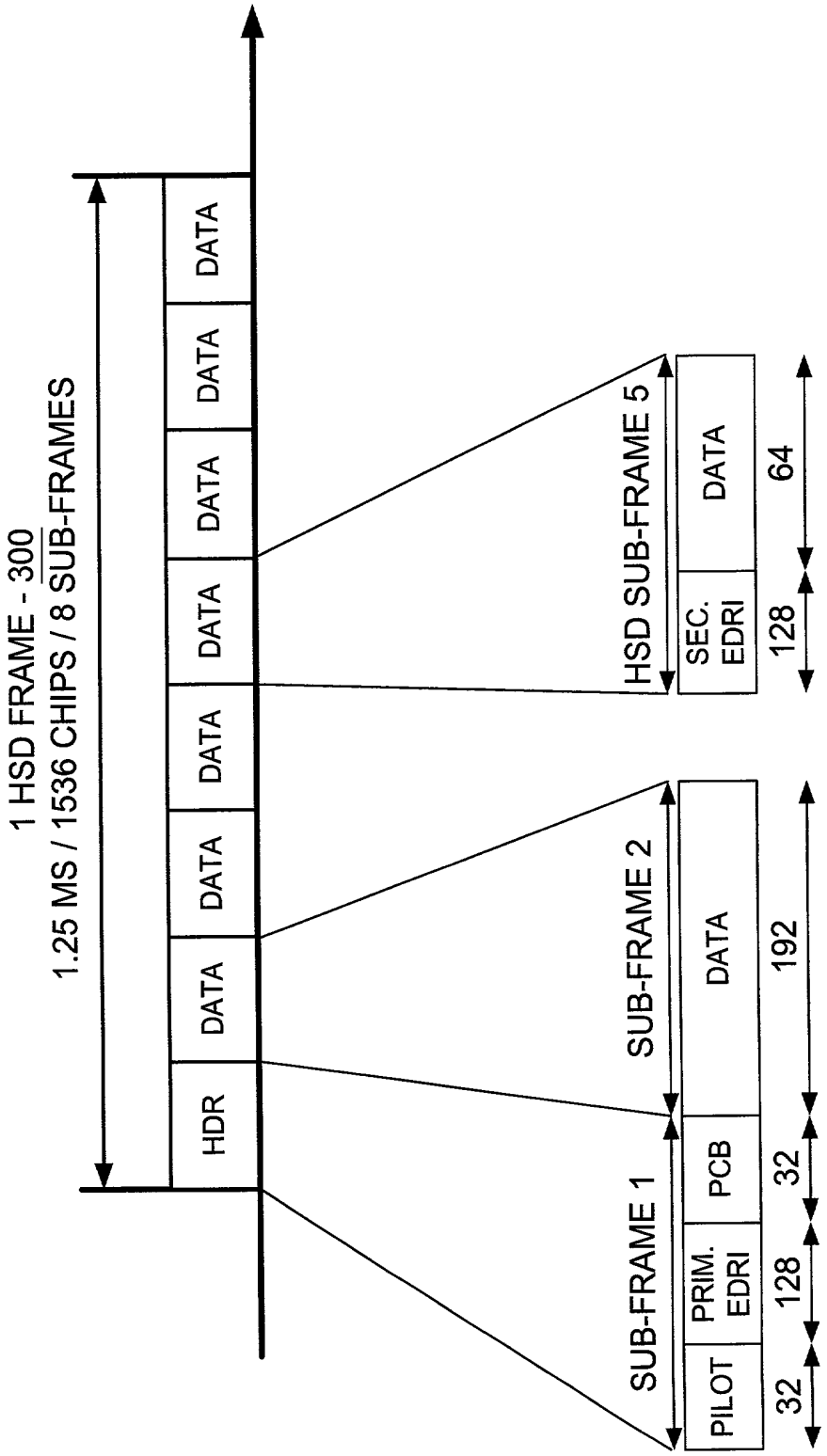
1 HSD FRAME - 300
1.25 MS / 1536 CHIPS / 8 SUB-FRAMES
HDR
DATA
DATA
DATA
DATA
DATA
DATA
DATA
SUB-FRAME 1
PILOT
PRIM. EDRI
PCB
DATA
32
128
32
192
SUB-FRAME 2
HSD SUB-FRAME 5
SEC. EDRI
DATA
128
64

FIG. 3

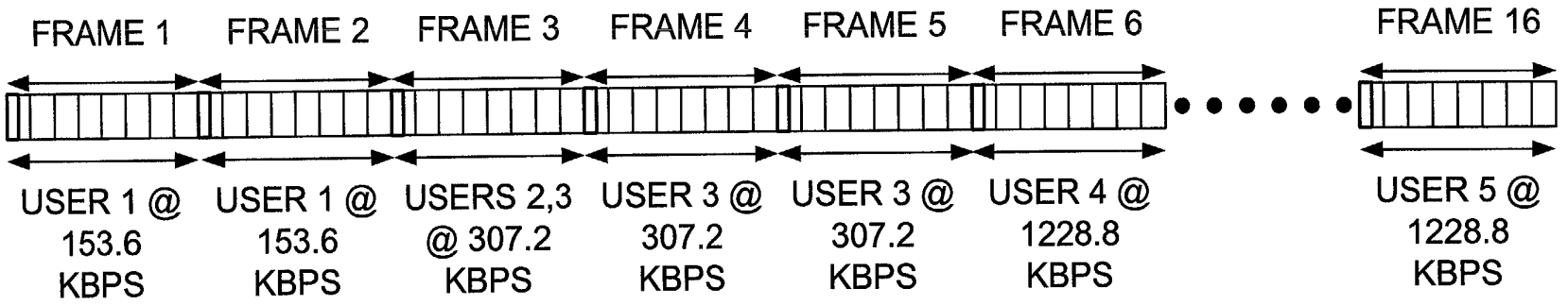
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
FRAME 6
FRAME 16
USER 1 @ 153.6 KBPS
USER 1 @ 153.6 KBPS
USERS 2,3 @ 307.2 KBPS
USER 3 @ 307.2 KBPS
USER 3 @ 307.2 KBPS
USER 4 @ 1228.8 KBPS
USER 5 @ 1228.8 KBPS

FIG. 4A

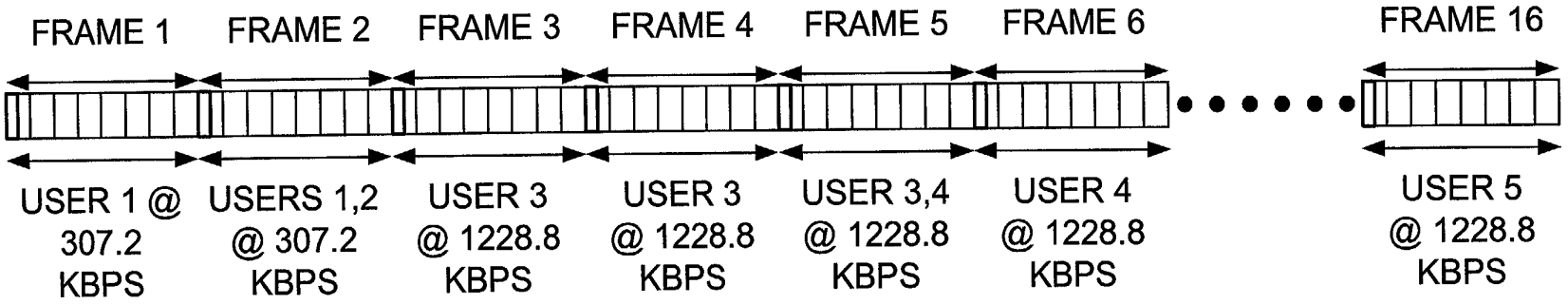
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
FRAME 6
FRAME 16
USER 1 @ 307.2 KBPS
USERS 1,2 @ 307.2 KBPS
USER 3 @ 1228.8 KBPS
USER 3 @ 1228.8 KBPS
USER 3,4 @ 1228.8 KBPS
USER 4 @ 1228.8 KBPS
USER 5 @ 1228.8 KBPS

FIG. 4B

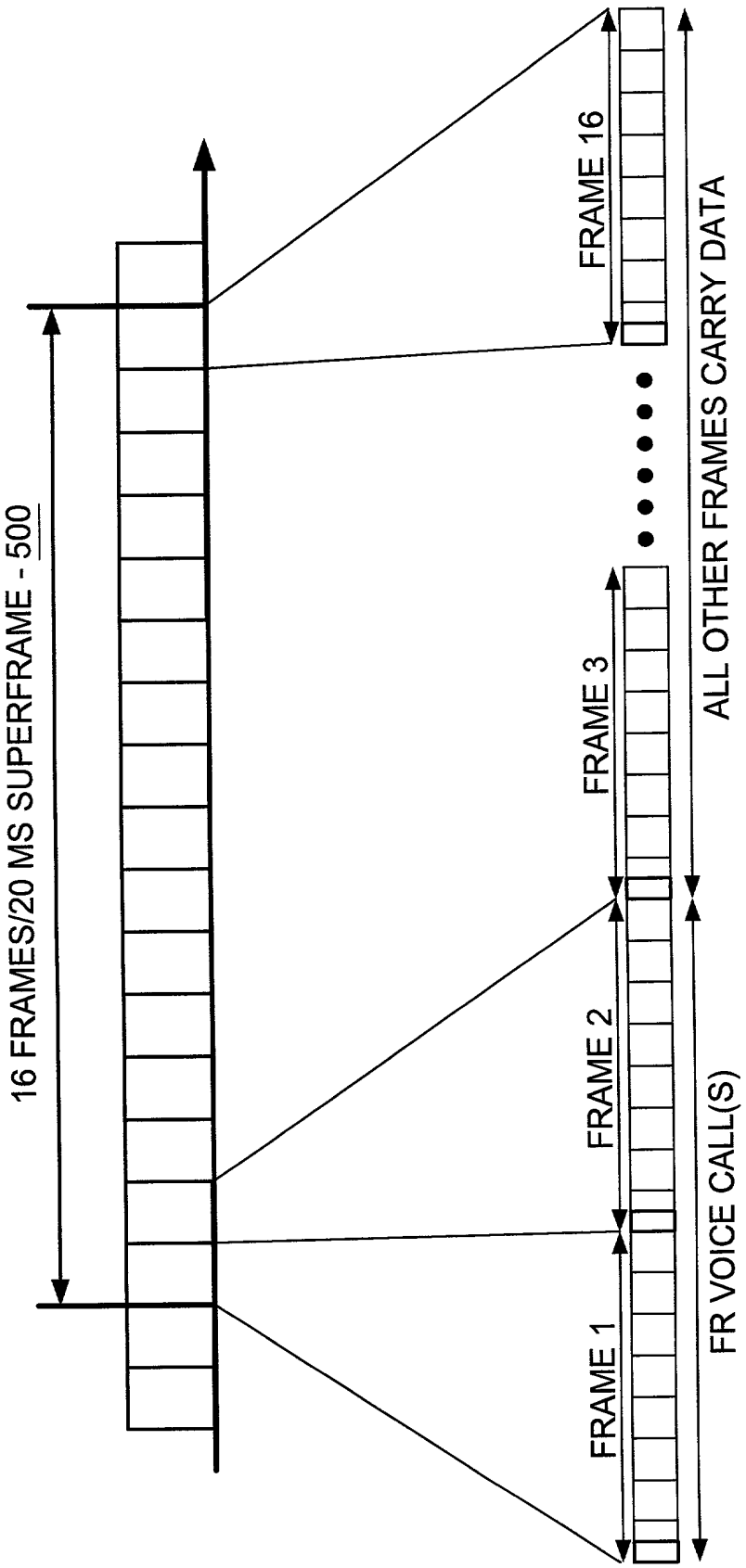
16 FRAMES/20 MS SUPERFRAME - 500
FRAME 1
FRAME 2
FRAME 3
FRAME 16
FR VOICE CALL(S)
ALL OTHER FRAMES CARRY DATA

FIG. 5

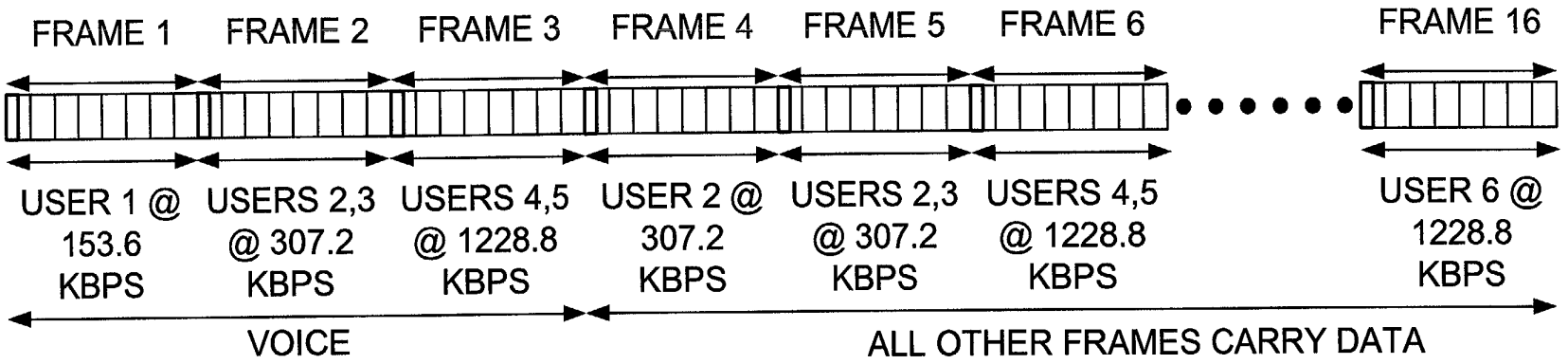
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
FRAME 6
FRAME 16
USER 1 @ 153.6 KBPS
USERS 2,3 @ 307.2 KBPS
USERS 4,5 @ 1228.8 KBPS
USER 2 @ 307.2 KBPS
USERS 2,3 @ 307.2 KBPS
USERS 4,5 @ 1228.8 KBPS
USER 6 @ 1228.8 KBPS
VOICE
ALL OTHER FRAMES CARRY DATA

FIG. 6A

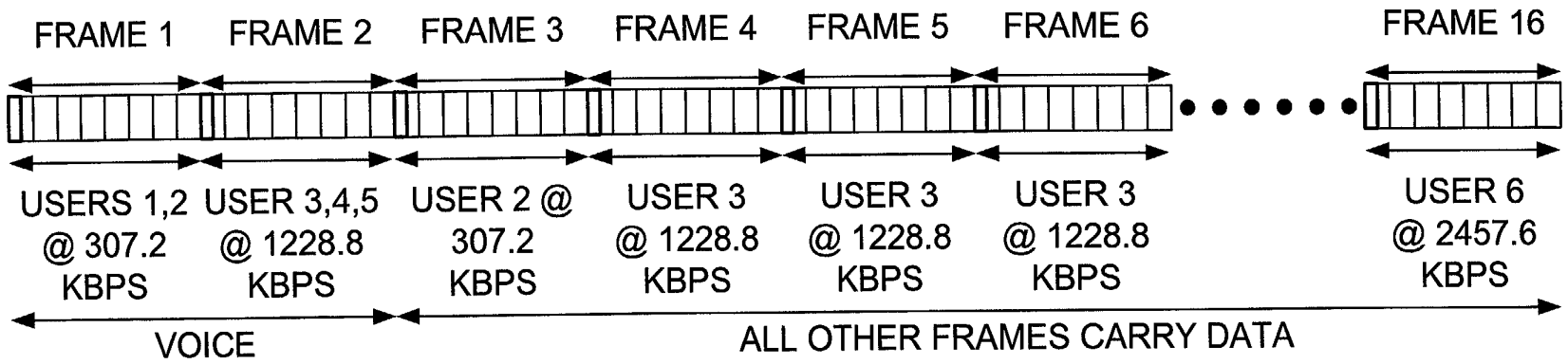
FRAME 1
FRAME 2
FRAME 3
FRAME 4
FRAME 5
FRAME 6
FRAME 16
USERS 1,2 @ 307.2 KBPS
USER 3,4,5 @ 1228.8 KBPS
USER 2 @ 307.2 KBPS
USER 3 @ 1228.8 KBPS
USER 3 @ 1228.8 KBPS
USER 3 @ 1228.8 KBPS
USER 6 @ 2457.6 KBPS
VOICE
ALL OTHER FRAMES CARRY DATA

FIG. 6B

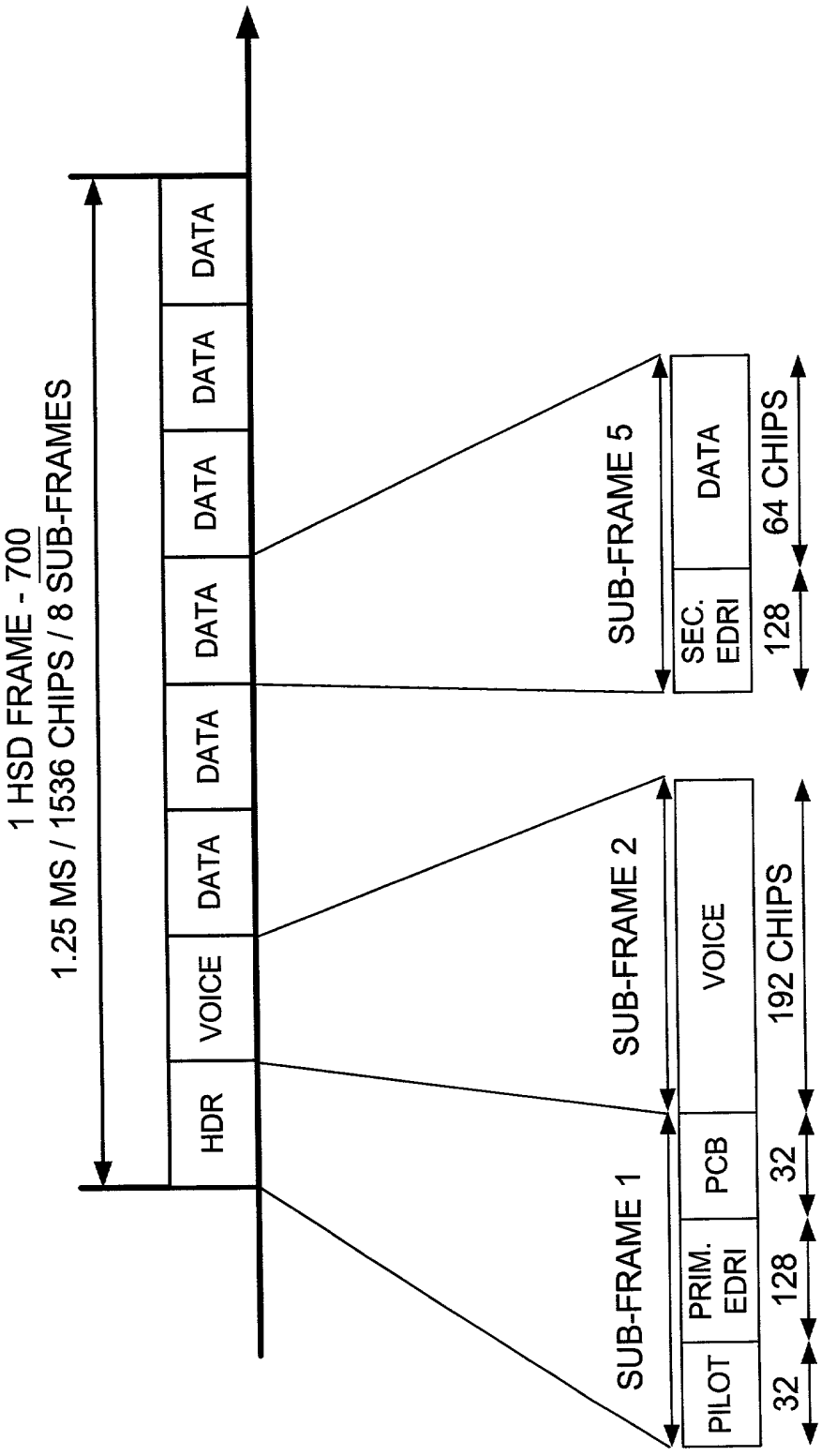
1 HSD FRAME - 700
1.25 MS / 1536 CHIPS / 8 SUB-FRAMES
HDR
VOICE
DATA
DATA
DATA
DATA
DATA
DATA
SUB-FRAME 1
PILOT
PRIM. EDRI
PCB
VOICE
32
128
32
192 CHIPS
SUB-FRAME 2
SUB-FRAME 5
SEC. EDRI
DATA
128
64 CHIPS

FIG. 7

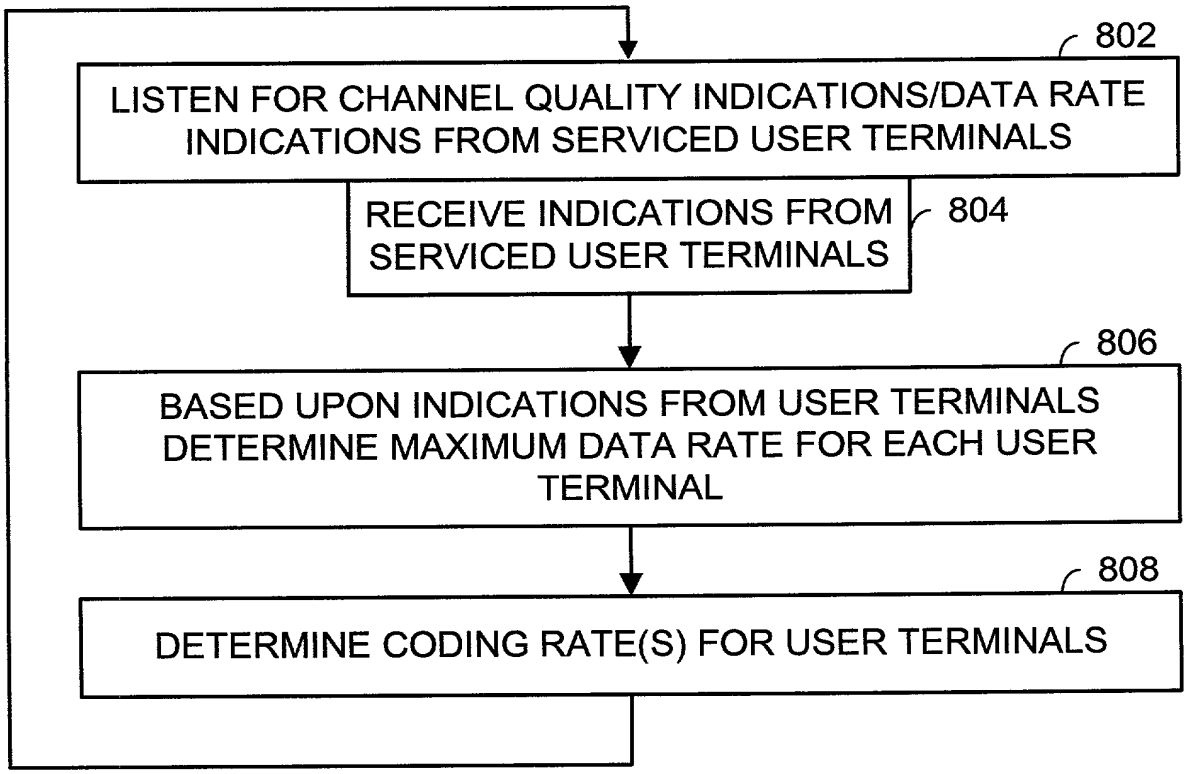
802
LISTEN FOR CHANNEL QUALITY INDICATIONS/DATA RATE INDICATIONS FROM SERVICED USER TERMINALS
RECEIVE INDICATIONS FROM SERVICED USER TERMINALS
804
806
BASED UPON INDICATIONS FROM USER TERMINALS DETERMINE MAXIMUM DATA RATE FOR EACH USER TERMINAL
808
DETERMINE CODING RATE(S) FOR USER TERMINALS

FIG. 8

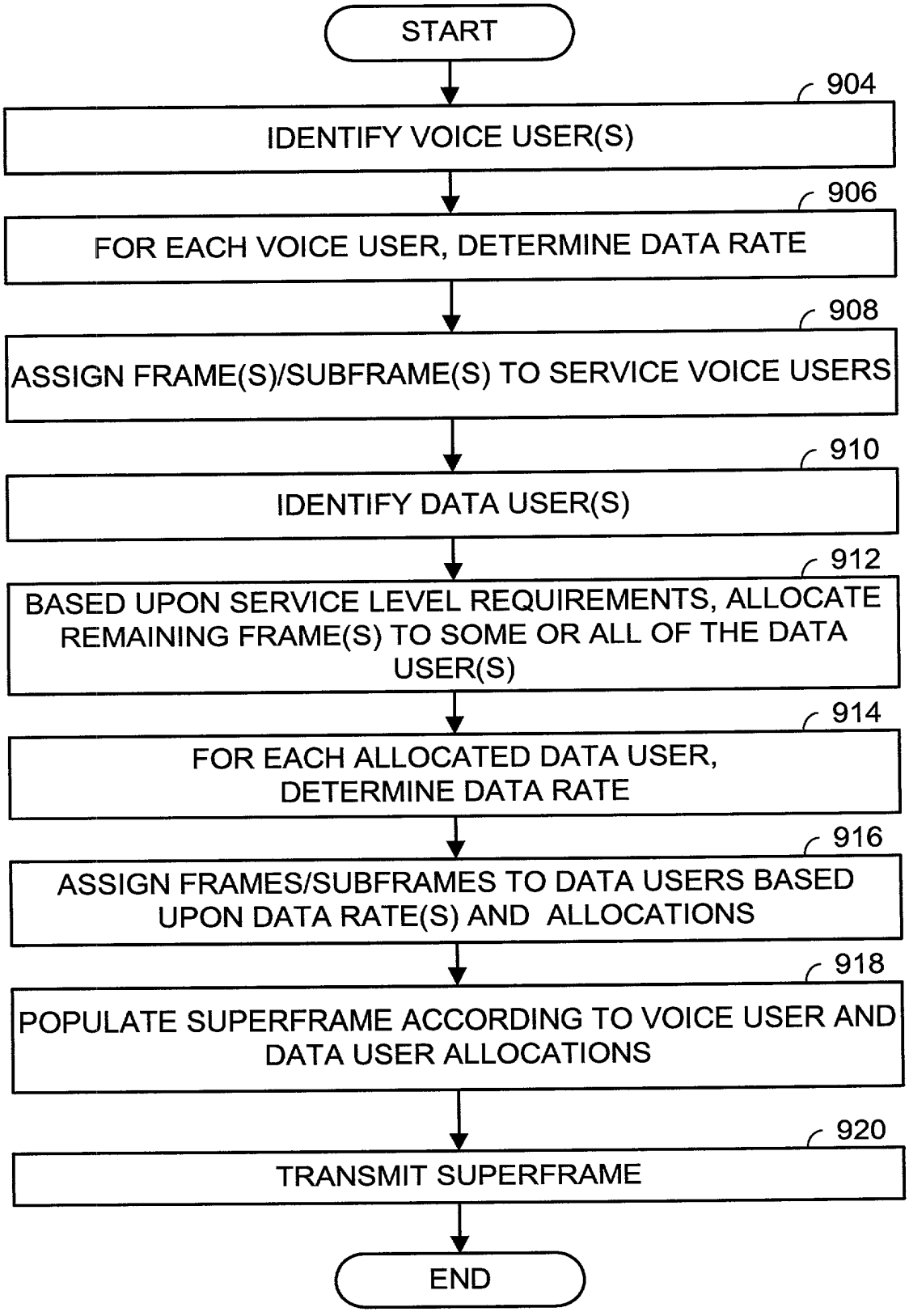
START
904
IDENTIFY VOICE USER(S)
906
FOR EACH VOICE USER, DETERMINE DATA RATE
908
ASSIGN FRAME(S)/SUBFRAME(S) TO SERVICE VOICE USERS
910
IDENTIFY DATA USER(S)
912
BASED UPON SERVICE LEVEL REQUIREMENTS, ALLOCATE REMAINING FRAME(S) TO SOME OR ALL OF THE DATA USER(S)
914
FOR EACH ALLOCATED DATA USER, DETERMINE DATA RATE
916
ASSIGN FRAMES/SUBFRAMES TO DATA USERS BASED UPON DATA RATE(S) AND ALLOCATIONS
918
POPULATE SUPERFRAME ACCORDING TO VOICE USER AND DATA USER ALLOCATIONS
920
TRANSMIT SUPERFRAME
END

FIG. 9

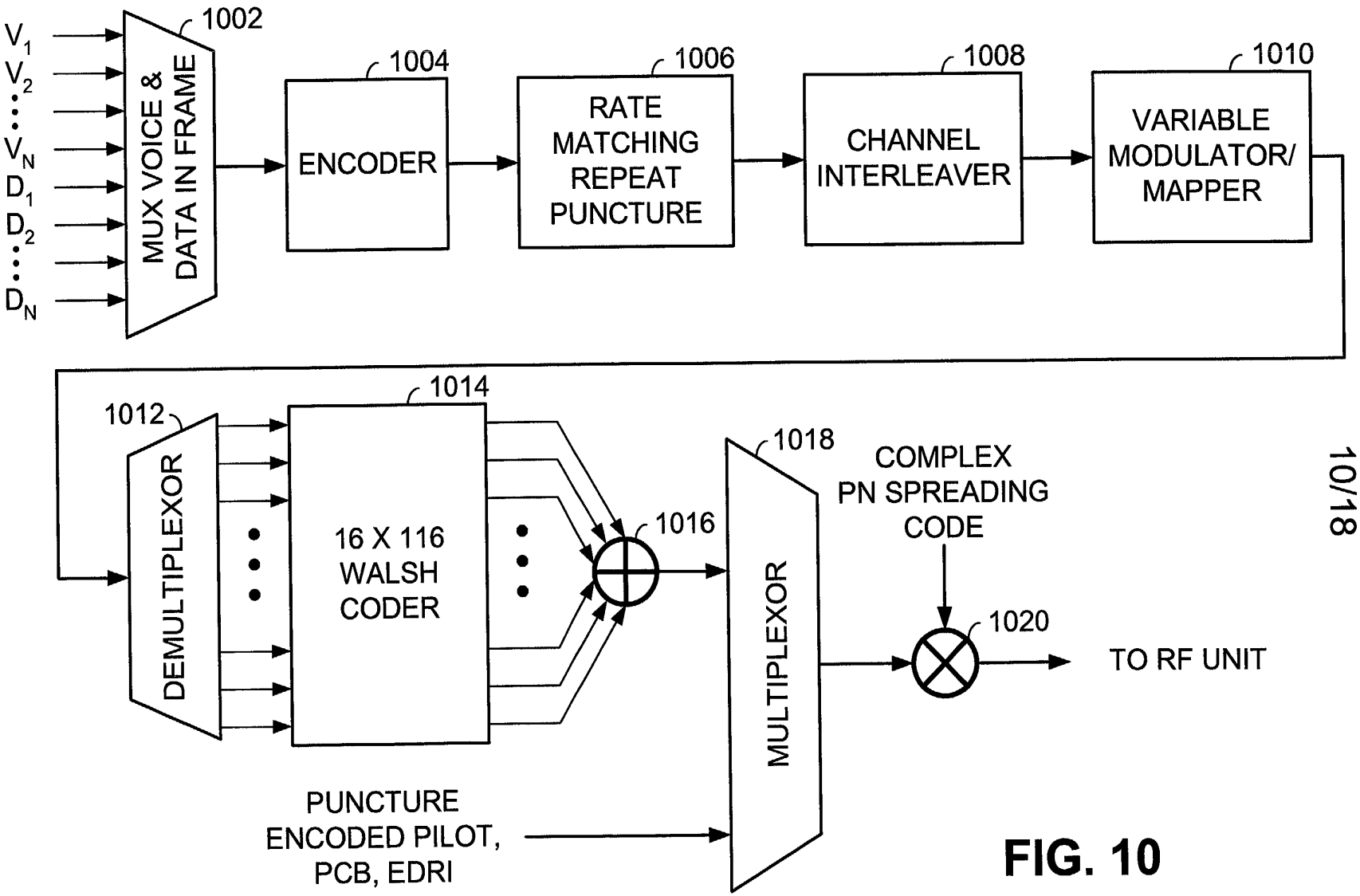
V1
V2
VN
D1
D2
DN
1002
MUX VOICE & DATA IN FRAME
1004
ENCODER
1006
RATE MATCHING REPEAT PUNCTURE
1008
CHANNEL INTERLEAVER
1010
VARIABLE MODULATOR/ MAPPER
1012
DEMULTIPLEXOR
1014
16 X 116 WALSH CODER
1016
1018
MULTIPLEXOR
COMPLEX PN SPREADING CODE
1020
TO RF UNIT
PUNCTURE ENCODED PILOT, PCB, EDRI

FIG. 10

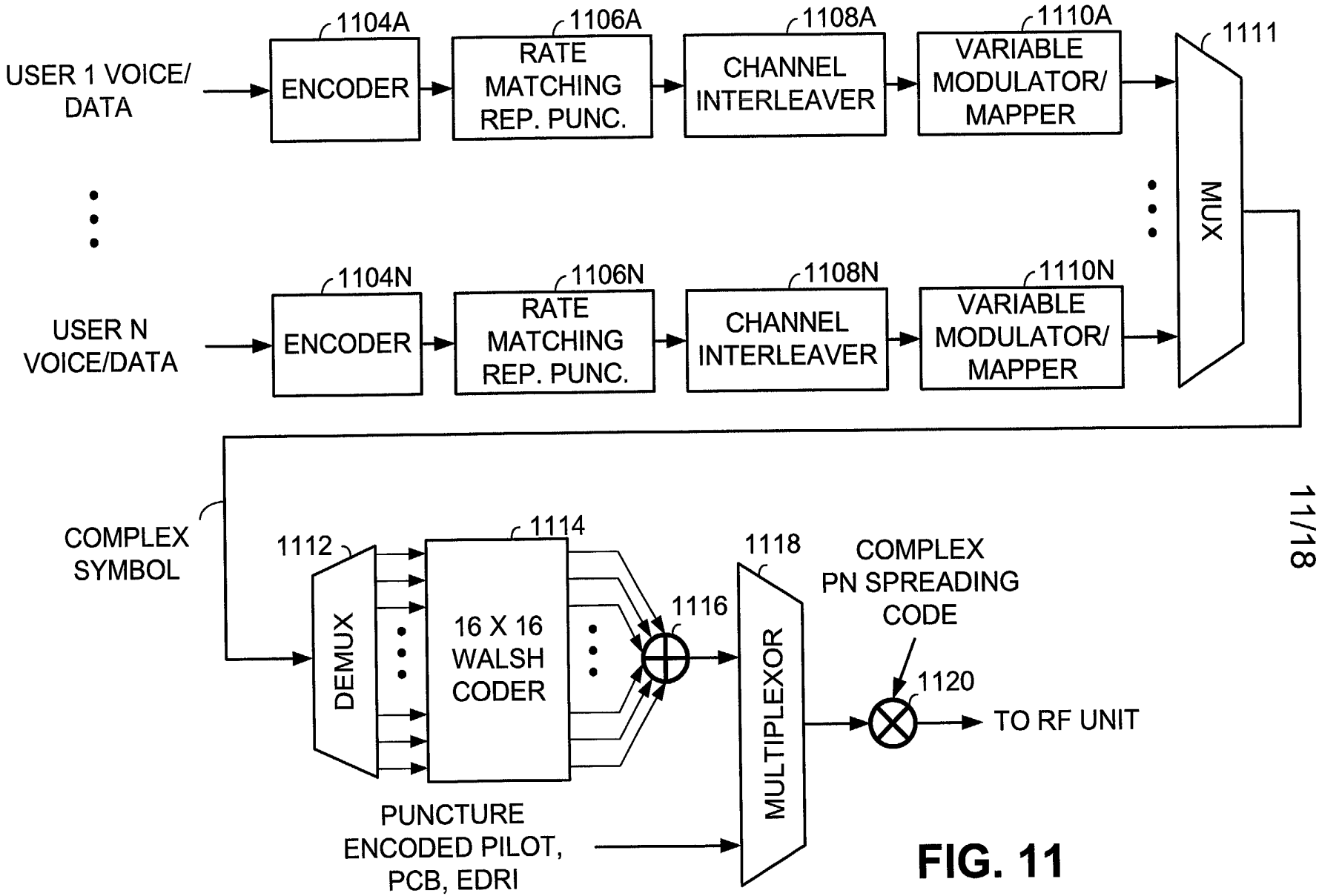
USER 1 VOICE/ DATA
1104A
ENCODER
1106A
RATE MATCHING REP. PUNC.
1108A
CHANNEL INTERLEAVER
1110A
VARIABLE MODULATOR/ MAPPER
1111
MUX
USER N VOICE/DATA
1104N
ENCODER
1106N
RATE MATCHING REP. PUNC.
1108N
CHANNEL INTERLEAVER
1110N
VARIABLE MODULATOR/ MAPPER
COMPLEX SYMBOL
1112
DEMUX
1114
16 X 16 WALSH CODER
1116
1118
MULTIPLEXOR
COMPLEX PN SPREADING CODE
1120
TO RF UNIT
PUNCTURE ENCODED PILOT, PCB, EDRI

FIG. 11

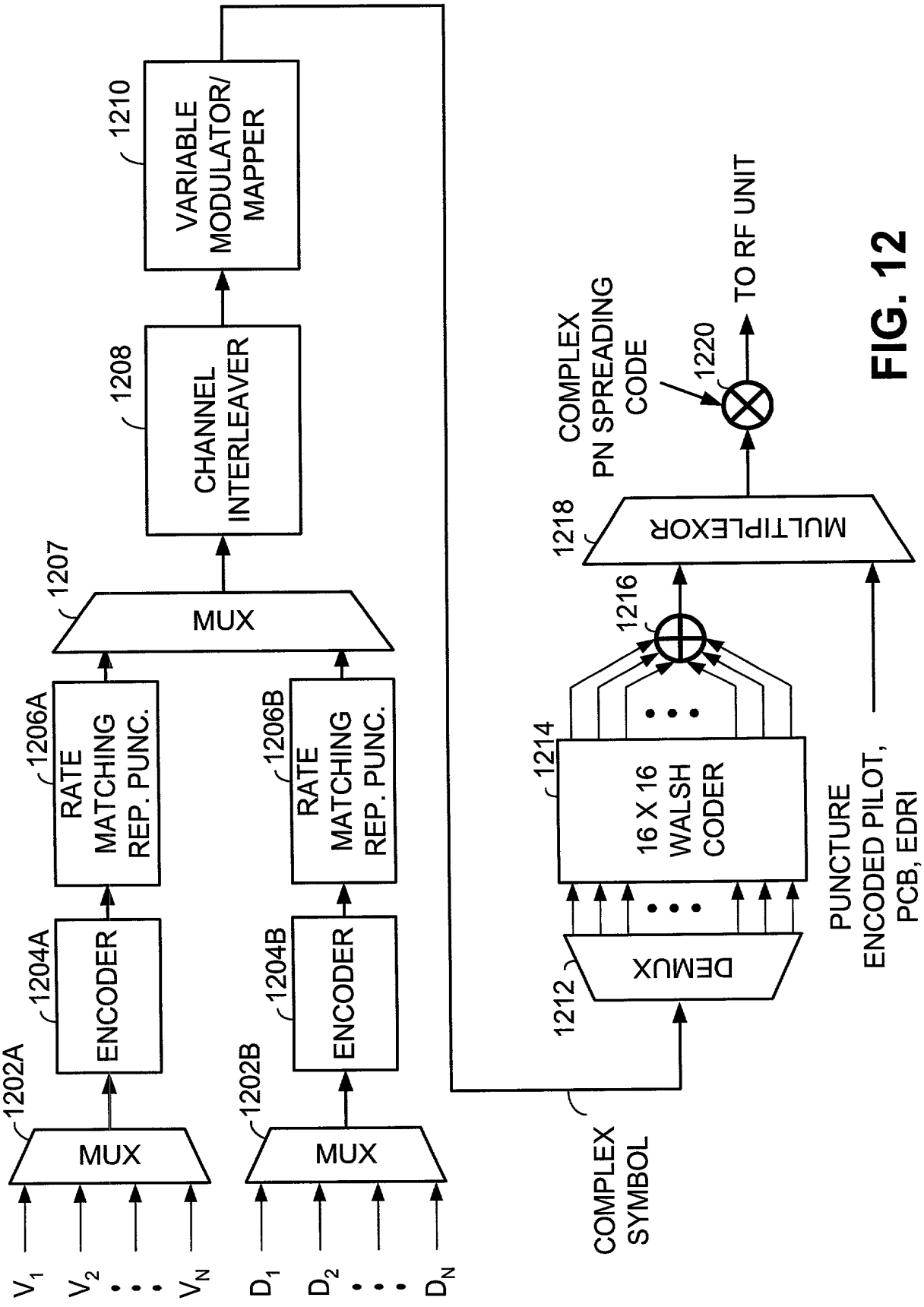
V1
V2
V3
VN
D1
D2
D3
DN
1202A
MUX
1204A
ENCODER
1206A
RATE MATCHING REP. PUNC.
1202B
MUX
1204B
ENCODER
1206B
RATE MATCHING REP. PUNC.
1207
MUX
1208
CHANNEL INTERLEAVER
1210
VARIABLE MODULATOR/ MAPPER
COMPLEX SYMBOL
1212
DEMUX
1214
16 X 16 WALSH CODER
1216
1218
MULTIPLEXOR
COMPLEX PN SPREADING CODE
1220
TO RF UNIT
PUNCTURE ENCODED PILOT, PCB, EDRI

FIG. 12

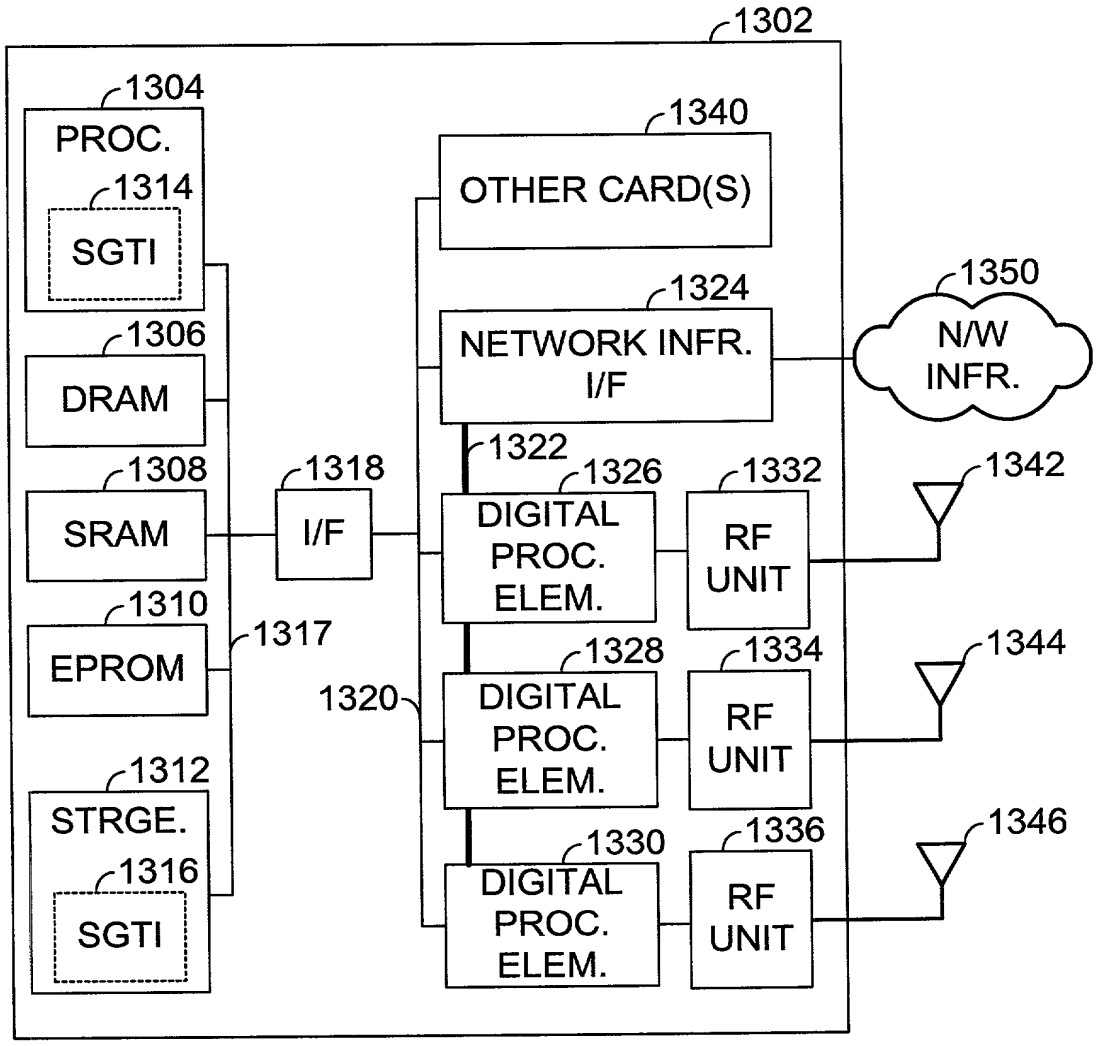
1302
1304
PROC.
1314
SGTI
1306
DRAM
1308
SRAM
1310
EPROM
1312
STRGE.
1316
SGTI
1317
1318
I/F
1320
1322
1324
NETWORK INFR. I/F
1326
DIGITAL PROC. ELEM.
1328
DIGITAL PROC. ELEM.
1330
DIGITAL PROC. ELEM.
1332
RF UNIT
1334
RF UNIT
1336
RF UNIT
1340
OTHER CARD(S)
1342
1344
1346
1350
N/W INFR.

FIG. 13

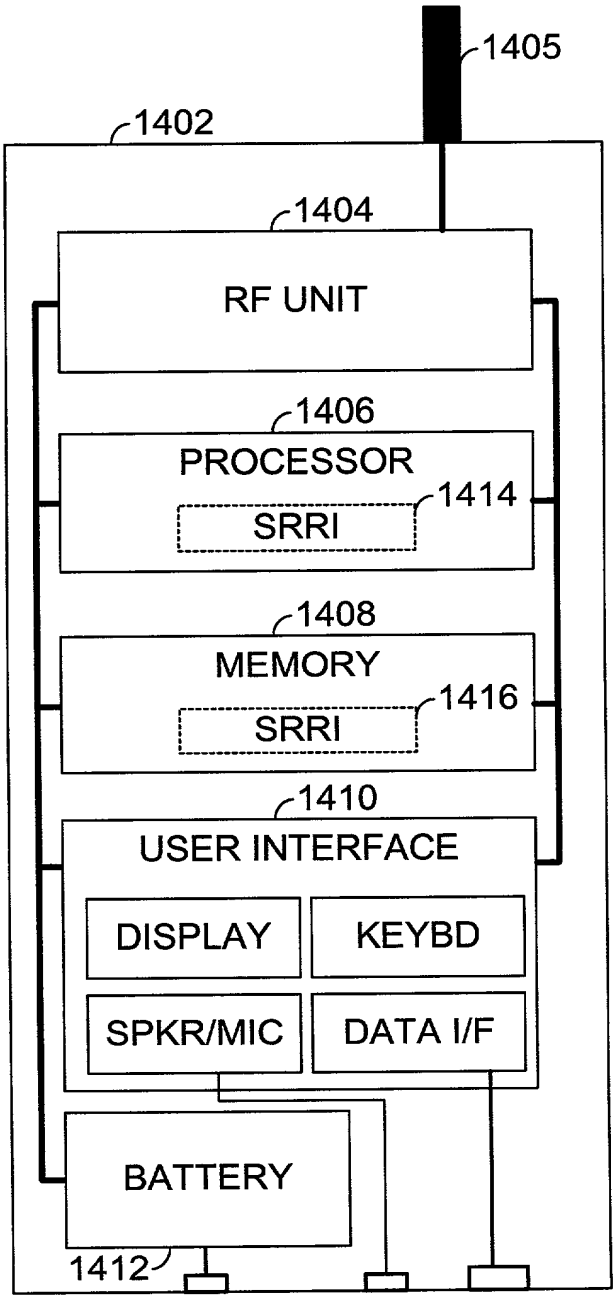
1405
1402
1404
RF UNIT
1406
PROCESSOR
1414
SRRI
1408
MEMORY
1416
SRRI
1410
USER INTERFACE
DISPLAY
KEYBD
SPKR/MIC
DATA I/F
BATTERY
1412

FIG. 14

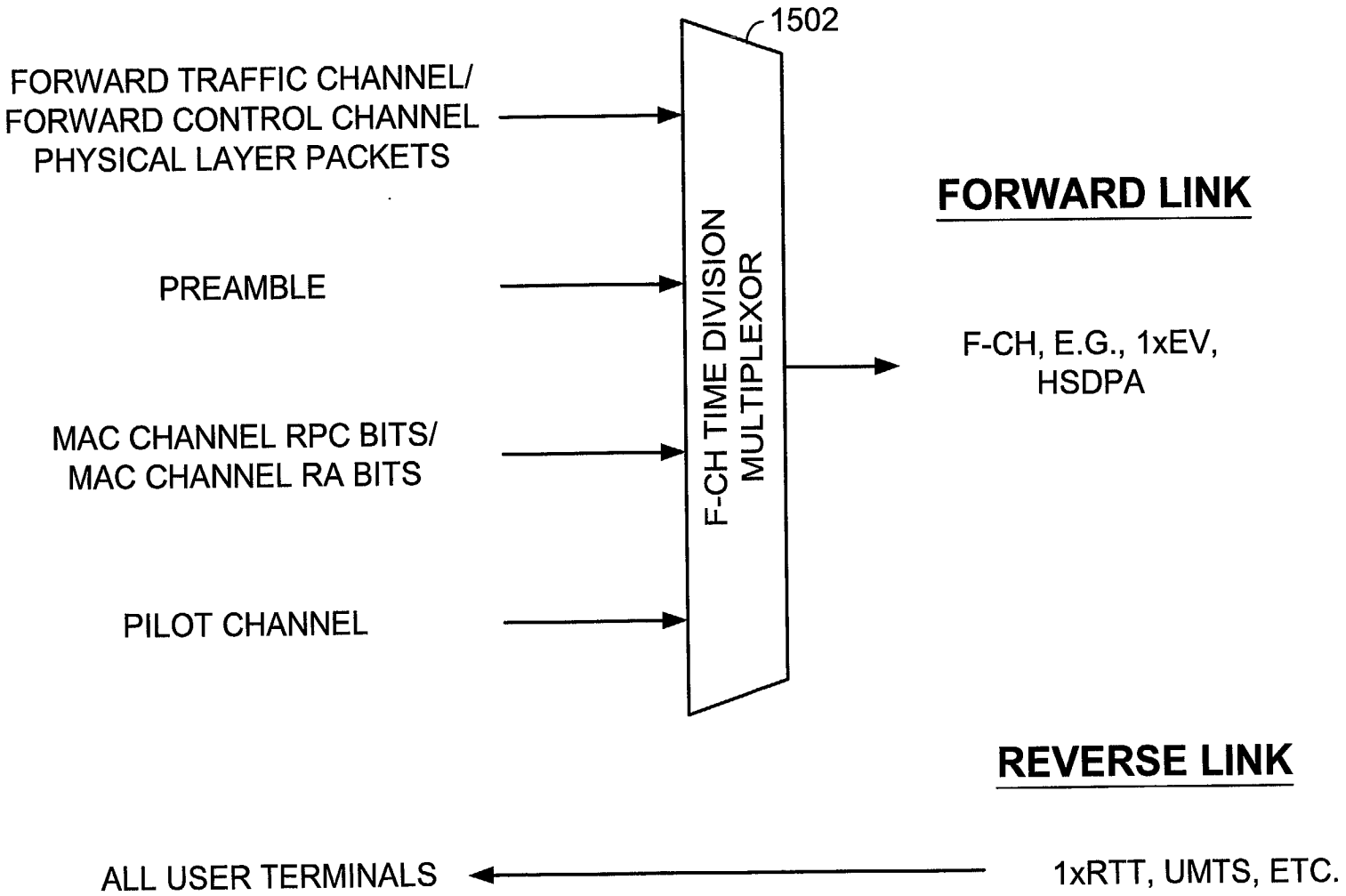
1502
FORWARD TRAFFIC CHANNEL/
FORWARD CONTROL CHANNEL
PHYSICAL LAYER PACKETS
PREAMBLE
MAC CHANNEL RPC BITS/
MAC CHANNEL RA BITS
PILOT CHANNEL
F-CH TIME DIVISION
MULTIPLEXOR
FORWARD LINK
F-CH, E.G., 1xEV,
HSDPA
REVERSE LINK
ALL USER TERMINALS
1xRTT, UMTS, ETC.

FIG. 15

TOETHO 20150360

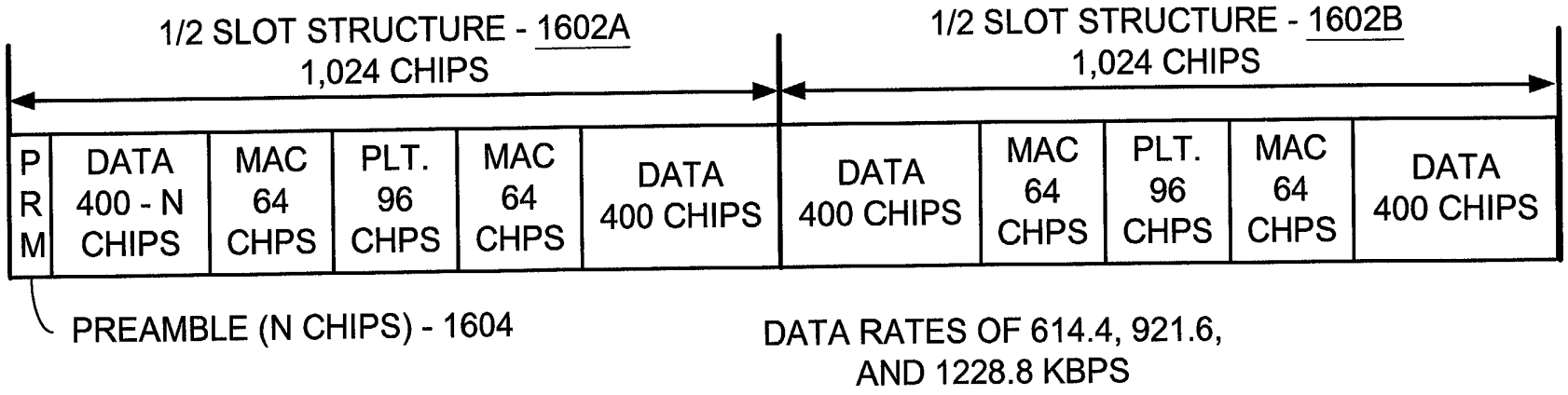

FIG. 16

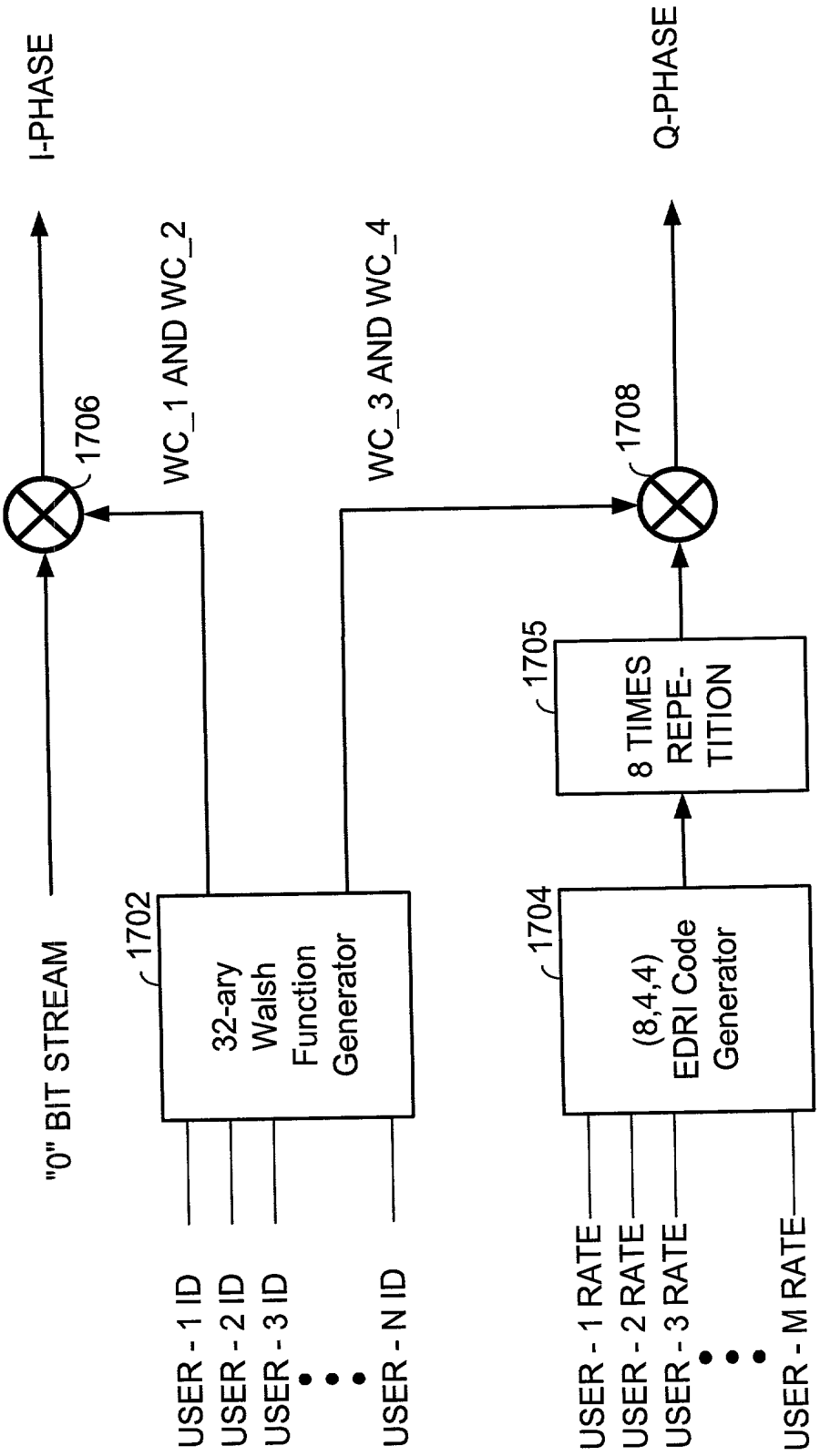
I-PHASE
Q-PHASE
"0" BIT STREAM
1706
1708
WC_1 AND WC_2
WC_3 AND WC_4
1702
32-ary Walsh Function Generator
1704
(8,4,4) EDRI Code Generator
1705
8 TIMES REPE-TITION
USER - 1 ID
USER - 2 ID
USER - 3 ID
USER - N ID
USER - 1 RATE
USER - 2 RATE
USER - 3 RATE
USER - M RATE

FIG. 17

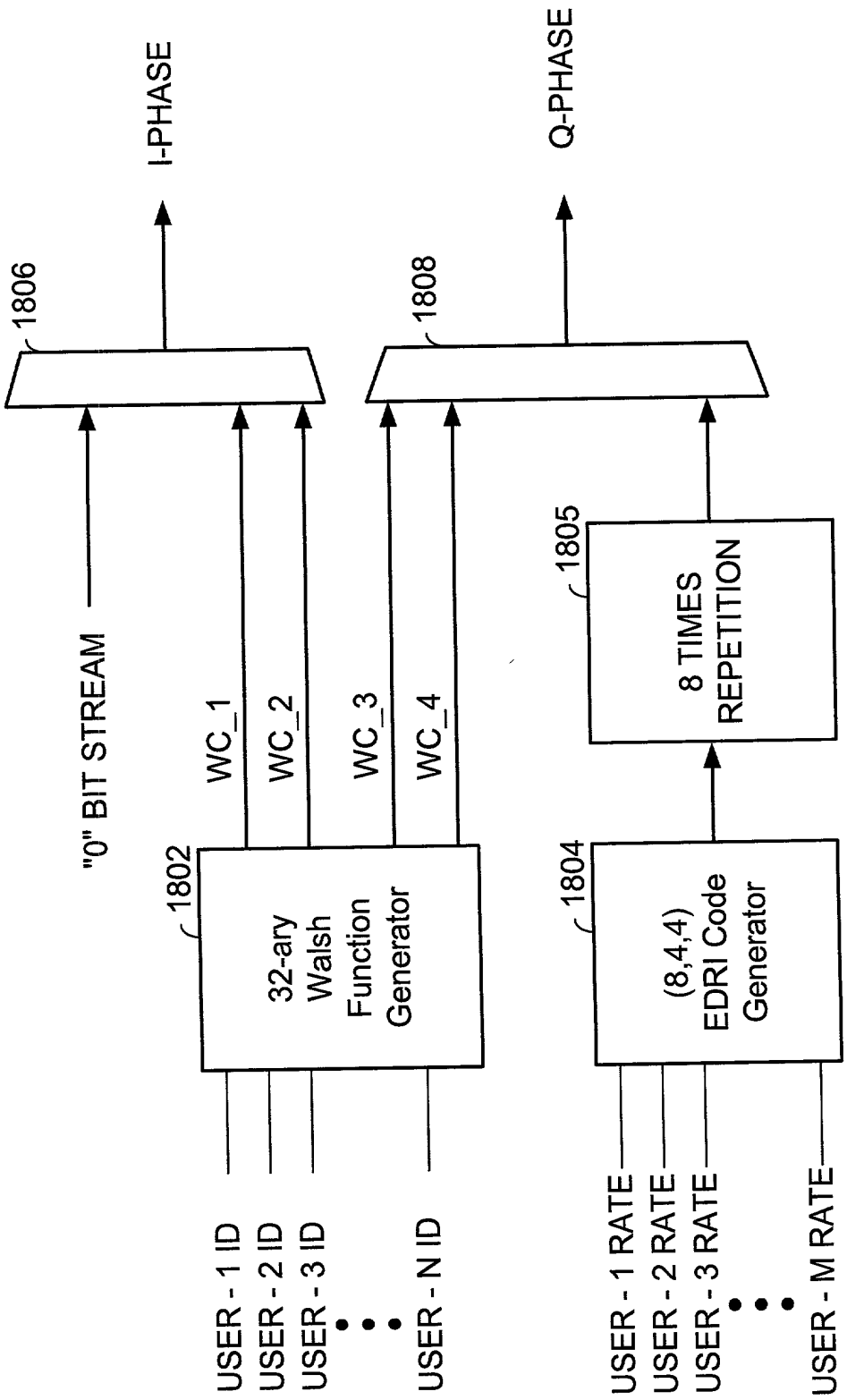
I-PHASE
Q-PHASE
1806
1808
"0" BIT STREAM
WC_1
WC_2
WC_3
WC_4
1802
32-ary Walsh Function Generator
1804
(8,4,4) EDRI Code Generator
1805
8 TIMES REPETITION
USER - 1 ID
USER - 2 ID
USER - 3 ID
USER - N ID
USER - 1 RATE
USER - 2 RATE
USER - 3 RATE
USER - M RATE

FIG. 18